

Claims

1. Vibration and displacement damper, in particular for cable stays, comprising a plunger piston (10) sliding inside a guiding cylinder (20) in a longitudinal direction (30), the plunger piston comprising over a part of its length a piston ring (12) sliding with a slight clearance inside a main chamber (13) provided in said cylinder, said ring comprising calibrated through-orifices (14) for a high-viscosity fluid, such that the variations in ambient temperature have little effect on damping efficiency, the fluid filling said chamber on both sides of said ring, said cylinder comprising, on either side of said main chamber (13) in the longitudinal direction, two secondary chambers (15, 16) that the plunger piston enters, said secondary chambers being filled, at least in part, by said high-viscosity fluid and comprising means for limiting the leakage of fluid from the main chamber toward the secondary chambers, and for facilitating it from at least one of the secondary chambers toward the main chamber.

2. Damper according to claim 1, characterised in that the damper further comprises means (27, 28, 29; 33) for maintaining the two chambers at substantially the same pressure.

3. Damper according to claim 2, characterised in that one of the secondary chambers contains an air volume (31) and is connected (27, 28, 29; 33) to the other secondary chamber, such that the high-viscosity fluid may circulate freely between these two secondary chambers.

4. Damper according to either claim 2 or claim 3, characterised in that it comprises a conduit (27) provided in the piston and opening (28, 29) into each of the secondary chambers (15, 16).

5. Damper according to any one of the preceding claims, characterised in that it further comprises at least one through-path (17, 18) provided in the cylinder in which means (19, 21) for limiting the passage of fluid from said main chamber toward the secondary chambers are inserted.

6. Damper according to any one of the preceding claims, characterised in that said plunger piston (10) is made from chromium-plated steel, treated in order to harden it at the surface, and is guided into said cylinder (20) on bronze bearings.

7. Damper according to any one of the preceding claims, characterised in that said fluid has a viscosity greater than 500 cSt.

8. Damper according to any one of the preceding claims, characterised in that said fluid has a viscosity of between several thousand and several million centistokes.

9. Assembly comprising a damper according to any one of the preceding claims, a vibration-damping cable and a structure to which the cable is attached, characterised in that the aforementioned plunger piston and cylinder are respectively connected, on the one hand, to the cable and, on the other hand, to the structure to which the cable is attached.

10. Application of a damper according to any one of claims 1 to 8, or of an assembly according to claim 9, characterised in that the longitudinal direction (30) of the damper extends substantially vertically and the plunger piston (10) passes through a bore (32) made in the cylinder (20) and having a first end (32a) that is open to the exterior and a second end (32b) open to one (16) of the secondary chambers, said secondary chamber (16) is connected to the other secondary chamber (15) and contains a volume (31) that is filled with air, in which said second end (32b) is entirely enclosed.

Vibration and displacement damper, in particular for cable stays

In the name of the company JARRET

Abstract

The invention relates to a vibration and displacement damper, which basically comprises a plunger piston (10) sliding with a slight clearance inside a guiding cylinder (20), the plunger piston comprising over a part of its length a piston ring (12) sliding inside a main chamber (13) provided in said cylinder, said ring comprising calibrated through-orifices (14) for a high-viscosity fluid filling said chamber on both sides of said ring. It is intended to damp vibrations and displacements, in particular of cable stays.

Fig. 2